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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,322	02/26/2004	Shoichi Ando	12052.33USD1	9419

7590 04/05/2007

Hamre, Schumann, Mueller & Larson, P.C.
P.O. Box 2902-0902
Minneapolis, MN 55402

EXAMINER	
ZHU, WEIPING	
ART UNIT	PAPER NUMBER
1742	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,322	ANDO ET AL.	
	Examiner	Art Unit	
	Weiping Zhu	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *10-17,21 and 22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9, 18-20 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/5/2004 and 8/7/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1-9, 18-20 and 23, drawn to a method of manufacturing a billet for cold forging, classified in class 148, subclass 659+, are currently under examination, Claims 10-17, 21 and 22 are cancelled in the reply for the restriction filed on January 19, 2007.

Claim Objections

2. Claims 1, 3, 4, 8, 18, and 19 are objected to because of the following informalities:

a. The "spherodizing" in claims 1, 3 and 19 should be changed to "spheroidizing";

b. The "les" in line 2 of claim 4 should be changed to "less";

c. The "in" in line 1 and "cooper" in line 4 of claim 8 should be changed to "is" and "copper" respectively; and

d. The "mad" in line 2 of claim 18 should be changed to "made".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 2 of claim 9, the phrase "for by" renders the claim indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 61-129246 in view of Tomioka et al. (US 3,532,560).

With respect to claims 1-3, JP ('246) discloses a method for manufacturing a billet for cold forging comprising: annealing a blank of medium carbon steel, drawing the blank, annealing the drawn blank to form a billet; and cutting the billet (2nd paragraph, right column, page 4, Fig. 2, orally translated by an USPTO translator).

JP ('246) does not specify the first and second annealings as spheroidizing annealings as claimed. However, it would have been obvious to one of ordinary skill in the art that the annealings are functionally equivalent to the spheroidizing annealings as evidenced by Tomioka et al. ('560) (col. 2, lines 5-10).

With respect to claim 3, the cutting step disclosed by JP ('246) is after the 2nd annealing. However it is well held that it was improper to read a specific order of steps into method claims. See MPEP 2111.01 II.

With respect to claim 2, JP ('246) does not disclose the drawing ratio as claimed. Tomioka et al. ('560) discloses that the drawing ratio is less than 20% (col. 7, lines 62-65). The claimed ratio of "approximately 20%" includes the less than 20% as disclosed by Tomioka et al. ('560). It would have been obvious to one of ordinary skill in the art to

have applied a drawing ratio of less than 20% as disclosed by Tomioka et al. ('560) in the process of JP ('246) in order to achieve the desired diameter and tensile strength of the wire as disclosed by Tomioka et al. ('560) (col. 7, lines 62-65).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP ('246) in view of Tomioka et al. ('560) as applied to the claim 1 above and further in view of JP 07-097656.

JP ('246) in view of Tomioka et al. ('560) does not specify the chemical composition of the medium carbon steel as in the instant claim 4.

JP ('656) discloses a cold forging medium carbon steel with a chemical composition comprising: C: 0.3-0.6 wt.%; Si:0.10 wt.% or less; Mn: 0.15-0.65 wt.%; P: 0.10 wt.% or less; S: 0.10 wt.% or less; Cu: 0.05-0.40 wt.%; Ni: 0.05-0.40 wt.%; and Cr: 0.50 wt.% (abstract and claim 2, translation), which overlaps the claimed composition. A prima facie case of obviousness exists. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to substitute the medium carbon steel of JP ('246) with that of JP ('656) in the process of JP ('246) with expected success because both medium carbon steels would have similar compositions.

6. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP ('246) in view of Tomioka et al. ('560) and further in view of Bach et al. (US 4,704,166).

With respect to claim 5, JP ('246) in view of Tomioka et al. ('560) is applied to the claim for the same reason as stated in the paragraph 4 above.

JP ('246) in view of Tomioka et al. ('560) does not teach quenching a blank unloaded form a heating furnace to form a fine martensite in a surface as claimed.

Bach et al. ('166) disclose a method for producing a medium carbon steel rod comprising cooling the hot-rolled article quickly to form a surface layer of martensite (col. 1, line 62 – col. 2, line 30).

It would have bee obvious to one of ordinary skill in the art at the time the invention was made to prepare the blank of JP ('246) in view of Tomioka et al. ('560) by quenching the blank to form a surface layer of martensite as disclosed by Bach et al. ('166) in order to reduce the cooling line length as disclosed by Bach et al. ('166) (col. 2, lines 30-32).

With respect to claim 9, JP ('246) discloses cold forging the billet by continuously drawing the billet, extruding the billet, upsetting the billet and finishing the billet without softening the billet in an intermediate stage (2nd paragraph, right column, page 4, Fig. 1, orally translated by an USPTO translator).

7. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP ('246) in view of Tomioka et al. ('560) and further in view of Bach et al. ('166) as applied to the claim 5 above and further in view of JP ('656).

With respect to claims 6 and 7, JP ('246) in view of Tomioka et al. ('560) and further in view of Bach et al. ('166) does not disclose the annealing schedules as claimed. JP ('656) discloses that a blank is annealed by holding the blank at 730° C for 4 hours, thereafter dropping the temperature to 680° C at a rate of 10° C/hour and thereafter cooling the blank in a furnace (paragraph [0018], translation). The disclosed

annealing process is substantially identical to the annealing process claimed in the instant claim 6.

JP ('246) in view of Tomioka et al. ('560) and further in view of Bach et al. ('166) and JP ('656) does not teach the annealing schedule in the instant claim 7. However, it is well held that discovering an optimum value of a result-effective variable involve only routine skill in the art. In re Boesch, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the annealing parameters are result-effective variables, because they would directly affect the spheroidized structure of the blank as disclosed by JP ('656) (right col., Line 5, page 78 to left col., line 2, page 80). See MPEP 2144.05 II. Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the annealing parameters in the process of JP ('246) in view of Tomioka et al. ('560) and further in view of Bach et al. ('166) and JP ('656) for the desired spheroidized structure of the blank. See MPEP 2144.05 II.

With respect to claim 8, JP ('656) is applied to the claimed composition for the same reason as stated in the paragraph 5 above.

8. Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP ('246) in view of JP ('656) and further in view of Sakai et al. (US 5,878,323)

With respect to claim 18, JP ('246) discloses a method for cold forging a billet comprising continuously cold forming the billet into a desired shape (2nd paragraph, right column, page 4, Fig. 1, orally translated by an USPTO translator).

JP ('246) does not specify the billet is formed into a crankshaft as in the instant claims 18 and 20. However it is well settled that merely changing the size of an article is not a matter of invention. See MPEP 2144.04 IV.

JP ('246) does not specify the chemical composition of the medium carbon steel as in the instant claim 18. JP ('656) is applied to the claimed composition for the same reason as stated in the paragraph 5 above.

JP ('246) in view of JP ('656) does not specify the aging step as claimed in the instant claims 18 and 20.

Sakai et al. ('323) disclose aging a forged connecting rod at 240° C for 3 hours followed by cooling it down to normal temperature (col. 13, lines 34-46). It would have bee obvious to one of ordinary skill in the art at the time the invention was made to add an aging step after the cold forming step in the process of JP ('246) in view of JP ('656) as disclosed by Sakai et al. ('323) in order to enhance the nature of the alloy as disclosed by Sakai et al. ('323) (col. 5, lines 40-45).

9. Claims 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP ('246) in view of Tomioka et al. ('560) and further in view of JP ('656) and Sakai et al. ('323)

With respect to claim 19, JP ('246) in view of Tomioka et al. ('560) is applied to the claim for the same reason as stated in the paragraph 4 above. JP ('246) in view of Tomioka et al. ('560) discloses a method for manufacturing a billet for cold forging comprising first spheroidizing annealing a blank, drawing the blank and the second spheroidizing annealing the drawn blank to form a billet as claimed.

With respect to claim 19, JP ('246) further discloses a method for cold forging a billet comprising continuously cold forming the billet into a desired shape (2nd paragraph, right column, page 4, Fig. 1, orally translated by an USPTO translator)..

JP ('246) in view of Tomioka et al. ('560) does not specify the billet is formed into a crankshaft as in the instant claims 19 and 23. However it is well settled that merely changing the size of an article is not a matter of invention. See MPEP 2144.04 IV.

JP ('246) in view of Tomioka et al. ('560) does not specify the chemical composition of the medium carbon steel as in the instant claim 19. JP ('656) is applied to the claimed composition for the same reason as stated in the paragraph 5 above.

JP ('246) in view of Tomioka et al. ('560) and further in view of JP ('656) does not specify the aging step as in the instant claims 19 and 23. Sakai et al. ('323) is applied to the claimed aging step for the same reason as stated in the paragraph 8 above.

Conclusion

10. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WZ

3/26/2007

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700